

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended, is respectfully requested.

Claims 22-42 are pending in this application. Claims 22 and 32 have been amended to better clarify the invention without introducing any new matter. Note the specification at page 18, lines 7-14, for example.

The outstanding Action presented an objection to the Abstract as having more than 150 words, an objection to the Brief Description of Drawings in the specification, and a rejection of Claims 22-42 under 35 U.S.C. §101 based upon the claims being directed to non-statutory subject matter.

Turning first to the Abstract, it is believed that the presentation by this amendment of a corrected Abstract based on the disclosure at page 15, line 22 to page 16, line 2 of the specification on a separate sheet that does not exceed 150 words obviates this objection. Thus, withdrawal of the objection to the Abstract is respectfully requested.

With regard to the objection to the Brief Description of the Drawings section of specification, it is respectfully submitted that the present amendment also overcomes this objection as it essentially adopts the suggestion in the outstanding Action by changing the specification language of "FIG. 3A (respectively 3B) shows" to now read -- FIGS. 3A and 3B show --. Therefore, withdrawal of this objection is further respectfully requested.

The outstanding rejection of Claims 22-42 under 35 U.S.C. §101 as being directed to non-statutory subject matter is traversed. In this respect, and as noted at the bottom of page 2 of the outstanding Action, 35 U.S.C. §101 specifically lists "any new and useful process" as

being **STATUTORY** subject matter. In order to maintain that the “process” presently claimed is not statutory, the USPTO must show that this claimed “process” is not “useful,” not “new” or that applicable **COURT** precedent excludes the claimed “process” because it falls under one of the judicially recognized exclusions in terms of “laws of nature, natural phenomena, and abstract ideas.” See the concurring-in-part/dissenting-in-part opinion of Administrative Patent Judge Barrett in *Ex parte Lundgren*, 76 USPQ2d 1385, 1402-03 (Bd. Pat. App. & Int. 2005). As it is clear that the processes claimed in this application are not directed to either “laws of nature” or “natural phenomena,” it appears that the rationale being relied on must be that Claims 22-42 are directed to mere “abstract ideas.”

However, it is further well established that a claimed process involving “an act, or series of acts, performed on the subject matter to be transformed and reduced to a different state or thing” is not directed to an “abstract idea.” Here, both independent Claim 22 and 32 require “ellipsometric and/or reflectometric devices and a spectrometer” to transform light energy into electrical signals indicating a “set of measurements leading to a measured spectrum, marked  $\psi$ .” Such energy transformations are recognized by the courts as being “physical transformations” that result in the subject matter being in “a different state.”

To the extent that MPEP§2106 concentrates on a “physical transformation” as being one that involves the transformation of tangible matter, e.g., an “article” it is inaccurate and at odds with precedent such as *In re Schrader*, 22 F3d. 290, 295 n.12, 30 USPQ2d 1455, 1459 n.12 (Fed. Cir. 1994) that notes:

In the Telephone Cases, 126 U.S. 1... (1887), the Court upheld the validity of a claim directed to a method for transmitting speech by impressing acoustic vibrations representative of speech onto electrical signals.” If there

was a requirement that a physical object must be “transformed or reduced, the claim would not have been patentable.... “

Clearly, any reliance on the MPEP §2106 presentation of inaccurately stated guidelines requiring a “physical transformation” that excludes changes to intangible subject matter representative of physical activity or objects is improper. *See Lundgren*, 76 USPQ2d at 1398-99.

Turning to the second point extracted from the guidelines reproduced in MPEP §2106, it is noted that the language “useful, concrete and tangible result” also appears to be misconstrued in the outstanding Action as to what constitutes a “tangible result” in terms of a “practical application.” In this regard, MPEP 2106 makes it clear that a tangible result or practical application simply mean that a real world result is produced as follows:

#### "TANGIBLE RESULT"

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a 35 U.S.C. 101 judicial exception, in that the process claim must set forth a practical application of that judicial exception to produce **a real-world result**. *Benson*, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had "no substantial practical application."). "[A]n application of a law of nature or mathematical formula to a ... process may well be deserving of patent protection." *Diehr*, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also *Corning*, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 ("It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted . . ."). In other words, the opposite meaning of "tangible" is "abstract." [Emphasis added].

In this regard, the Federal Circuit used the language “useful, concrete, and tangible result” in State Street Bank & Trust v. Signature Financial Group, Inc. 149 F.3d 1368, 1373, 47USPQ2d 1596, 1601 (Fed. Cir. 1998) in terms of noting a “useful, concrete and tangible

result” found to be present as to a “smooth waveform” from In re Alappat, 33 F. 3d 1356, 31USPQ2d 1545 (Fed. Cir. 1994) (in banc) and as to the indication of “condition of a patient’s heart” taken from Arrhythmia Research Technology Inc. v. Corazoning Corp., 958 F. 2d 1053, 22USPQ2d 1033 (Fed. Cir. 1992) as well as to a number determined by a mathematical algorithm in that case because the number was representative of

... discrete dollar amounts [produced] by a machine through a series of mathematical calculations into a final share price [that] constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces “a useful, concrete and tangible result”--a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.

Clearly, simply because mathematical algorithms are used in base Claims 22 and 32 “for optical characterization of at least one layer of material,” this optical characterization has a “real-world result” as at least the determination of the “refraction index” as in Claim 22 or the spectrum with a predetermined accuracy as in Claim 32. As explained in the specification at page 1, these determinations permit the following physical dimensions of a layer to be determined:

- the thickness of a layer of material;
- the refraction index of this material; and
- the absorption coefficient of this material.

This page of the specification also discloses “practical applications” (contrary to the assertion at the bottom of page 3 of the outstanding Action as follows:

Optical characterisation of materials is used for the chemical analysis of these materials (notably the study of absorption bands, of densification properties and of oxidation properties), in the fields of microelectronics, sensors, biology, medicine, or to analyse the thickness of deposits of these materials.

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We refer to document [1] for examples of applications which, as for the other documents cited later on, is mentioned at the end of this description.

The characterisation of the optical properties of a material is also useful when the material is structured later on (to create for example etchings or surface roughness) and the optical diffraction properties of the obtained structure must be calculated (see document [2]).

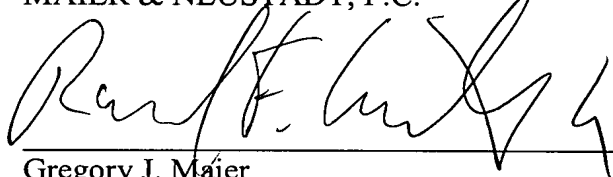
Thus, the bottom of page 3 of the outstanding Action mischaracterizes the claimed subject matter as “[m]erely using mathematical techniques to manipulate the data to characterize a layer of material” and incorrectly suggests that “the outcome of the steps 1-8 has not been used in a disclosed practical application not made available in such a manner that its used in a disclosed practical application can be realized.”

Accordingly, withdrawal of the rejection of Claims 22-42 under 35 U.S.C. §101 is respectfully requested.

As no other issues are believed to remain outstanding relative to this application, it is believed to be clear that this application is in condition for formal allowance and an early and favorable action to this effect is, therefore, respectfully requested.

Respectfully submitted,

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